

ABSTRACT

A process unit comprising: (a) a first microchannel module comprising: (i) a first unit operation including microchannels, in which at least a portion of a unit operation takes place, adapted to be in fluid communication with a first inlet stream and a first outlet stream, and (ii) a second unit operation including microchannels adapted to be in thermal communication with the first unit operation, the second unit operation adapted to be in fluid communication with a second inlet stream and a second outlet stream; and (b) a pressurized vessel at least partially containing the first microchannel module adapted to be concurrently occupied by a compressive medium in thermal communication with the first microchannel module.